

## ABSTRACT

A multi-layer film having a layer structure that a polyvalent metal compound-containing layer adjoins one side  
5 or both sides of a polymer layer containing a carboxyl group-containing polymer and a polyvalent metal salt of the carboxyl group-containing polymer, wherein the polymer layer has a concentration gradient structure that the concentration of the polyvalent metal salt of the carboxyl  
10 group-containing polymer in the polymer layer is continuously reduced in the thickness-wise direction from a surface adjoining the polyvalent metal compound-containing layer, and a peak ratio  $A_{1560}/A_{1700}$  as determined on the basis of an infrared absorption spectrum of the polymer  
15 layer is at least 0.25.